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# Department of Homeland Security Summer Internship

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# DHS Summer Internship

## Experiences at Lawrence Livermore

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My time at Lawrence Livermore National Laboratory (LLNL) has been one of the most rewarding and exciting experiences of my life. When I first applied for a Department of Homeland Security (DHS) internship I was concerned that my major in Mass Communications and Emergency Management would not be suited for the hard science environment. Thankfully DHS and my mentor, Brooke Buddemeier, demonstrated that the skills and knowledge I possess are critical for the successful integration of good science into Homeland Security and emergency response, and allowed me the opportunity to work on an exciting project. This paper intends to give an overview of my experiences while at LLNL, explain the project I have been a part of, explain my specific role within that project, discuss my achievements, explain how my internship has changed where I plan to take my career path, and, finally, discuss how I believe DHS can enhance their future internship programs.

My time at LLNL has been spent helping to support a project on response planning for a 10 kiloton (low-yield), ground-level nuclear detonation in a major metropolitan area. The overall goal of this project is to help improve national preparedness for response to the aftermath of a nuclear detonation. The Planning Guidance for Response to a Nuclear Detonation, Second Edition<sup>1</sup>, states that

One of the most catastrophic incidents that could befall the United States (US), causing enormous loss of life and property and severely damaging economic viability, is a nuclear detonation in a US city. It is incumbent upon all levels of government, as well as public and private parties within the US, to prepare for

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<sup>1</sup>Developed by The National Security Staff Interagency Policy Coordination Subcommittee for Preparedness & Response to Radiological and Nuclear Threats; June, 2010

this incident through focused nuclear attack response planning... Local and State community preparedness to respond to a nuclear detonation could result in life-saving on the order of tens of thousands of lives (p. 8).

One specific goal of this project is to make people aware that a low-yield nuclear attack will not be the “nuclear Armageddon” situation that most think of when they hear of a nuclear detonation. While a low yield attack will likely destroy a portion of the given city, it will leave most of the surrounding area intact and able to respond to the disaster. There will be many victims within the areas radiating outwards from the detonation site that need medical care for blast injuries and radiation exposure, but still have a chance for survival if they are able to receive medical aid. Also, many will have a chance of avoiding deadly doses of radiation from fallout exposure if they can seek an adequate shelter.

One of the most interesting findings of this project is that potentially 100,000s of lives can be saved through knowledge on how to shelter-in-place, or to seek shelter in the immediate vicinity, following an attack. Most commercial, and many residential, spaces offer adequate protection against radiological fallout. In many cases, simply getting as far underground as possible may be enough to save someone’s life. This could be something as simple as seeking shelter in a basement or underground parking garage. The only way people will know to do these things, however, is through education and planning. Once people are more aware of the survivability of a nuclear attack, it is likely that their desire to begin planning will increase.

Much of the work for this project is done to support federal, state and local agencies in creating emergency response plans for a low yield attack. This is done by creating modules with information on what happens after a nuclear bomb explodes, including how fallout works and the types of injuries and structural damage likely to occur immediately following the blast. This project also outlines response strategies, and gives advice on how to shelter-in-place and when to evacuate. This project bases its information off of existing research conducted in the early 1950s on radiological fallout, as well as the extensive work done by LLNL and other national laboratories and technical organizations.

My role in this project was to take scientific research and presentations and turn them into training materials for responders and the public. These guides needed to be easily understood, and geared towards first responders. The guides contain the facts and information necessary to stress the importance of planning for a small-scale nuclear attack, as well as the information necessary to do so. In order to begin writing on nuclear terrorism, it was necessary for me to increase my knowledge on the subject. To increase my familiarity with the subject, and, more specifically, with the concept of radiation protection factors, I helped with a literature review of documents from the 50s. These documents were a compilation of articles written by the U.S. Atomic Energy Commission. I read through several articles and compiled information from each of them into a document useable for cross-referencing. These articles introduced me to the concept of Protection Factors, or the level of protection a particular location within a building offers against radiological fallout. Working on this literature review helped give me the background knowledge necessary to understand the scientific articles and

presentations, produced by Buddemeier and his colleagues, and turn them into training materials.

The information from this material, the research conducted at LLNL, and various federal documents on nuclear response planning, provided the basis for a suite of training products for the first responder and emergency management communities. By using my Mass Communications and Emergency Management background, I was able to take scientific research data and turn it into a set of documents that are easy to follow, appealing to view, and applicable to the emergency management community. I completed five separate training modules: Federal Planning, Fallout Effects, Prompt Effects, Response and Shelter-Evacuation. Each of these modules includes an instructor guide which follows a set of PowerPoint slides, and a student handout which follows the presentation. These modules are designed so that they may be taught as a combined, full course, or taken as individual modules. Upon completion of an individual module, or the entire set, a person will have a greater understanding, and increased background knowledge, on topics related to a low-yield nuclear attack.

I am proud of these training modules, and believe they will be actively used in future projects for LLNL. I am currently in the process of converting them to the LLNL Global Security format for use in their training presentations, and my mentor is working with the Federal Emergency Management Agency (FEMA) to turn these into federal training materials. I believe that I have contributed something to the response community through my time at LLNL, and know that the work I have done on this project will help others prepare for a low-yield nuclear attack, and, possibly, help save lives through planning.

My time at LLNL not only allowed me to contribute to an integral project for Homeland Security, but also helped me further define my future academic and career goals. Prior to starting this internship I believed I wanted to finish my undergraduate degree in Emergency Management and start working in this field. I had hoped to find a job helping with planning and writing response plans, much like I have been doing at LLNL, but with a focus on natural disasters. Specifically, I had planned on focusing on risk management and infrastructure protection. Prior to this internship I had not considered the idea of planning to respond after a terrorist act. My project here, however, has dealt exclusively with this topic.

As my internship has progressed, I have realized that the Homeland Security field offers a diverse and fascinating career opportunity; a career opportunity I intend to pursue. This internship has helped me realize that I also want to work on the prevention of terrorist attacks, as well as response. This realization came from three sources: the DHS lectures I have attended every week, a training exercise I was invited to attend, and the work I have seen completed while at LLNL.

The weekly DHS lectures have all been interesting, but the most interesting ones were those that mentioned work done to actively prevent terrorism. Examples include “24/7 Reach-Back at LLNL,” “The Application of Science to National Security,” and “Real-Time Analysis of Aerosols and Breath for National Security and Counter-terrorism.” These presentations helped me realize the breadth and scope of work that goes into preventing terrorism. I would love to be a part of one of these projects that help keep America safe.



The second exciting experience for me was the chance to observe a training exercise aboard a docked yacht with Joel Swanson of the Department of Energy's Region 7 Radiological Assistance Program. Swanson worked with DHS Police, Harbor Patrol and the Coast Guard to simulate a radiological event. Swanson hid radioactive sources around the yacht, and helped train the DHS Police in detection. This exercise was meant to simulate what could happen if terrorists attempted to smuggle radioactive materials into the United States. Working with Swanson and observing this training exercise helped emphasize for me the need for training and response exercises.

Finally, observing all of the work that my mentor and his colleagues are a part of through LLNL, The Department of Energy and The Department of Homeland Security helped me see how much work goes into producing response plans. There is more to writing these plans than simply looking up research that was already completed. For planning involving future terrorist events, much of the research does not exist yet since many of these types of events have yet to occur. Planning for these types of events requires conducting the tests and exercises now to help save lives in the future.

These experiences have all shaped my interest in working in the Homeland Security field. I find the work being done so exciting, important and cutting-edge and I cannot wait to be a part of this in the future. To accomplish this, I have made the decision to try and find work in Homeland Security following graduation, and, eventually, pursue a Master's degree in a related field. I hope to one day find work in Homeland Security and work towards creating response plans that help prevent terrorism, and helps to save as many lives as possible should a terrorist event occur. I believe that my background and skills, along with future education, will make me a uniquely qualified

person for this field. I will be able to understand both sides of Homeland Security: the prevention side, and the emergency response side. On top of this, my Mass Communications background has given me the skills and ability to talk to, and work with, a wide variety of people, as well as understand how to produce materials understandable by the general public. My background, as well as my time as an LLNL intern, has helped me decide that switching my career path to one related to Homeland Security is where I can be most useful in the future.

The last section of my paper is a suggestion to DHS on how future internship programs could be enhanced. I feel very lucky to have been given the opportunity to participate in this internship, despite not having a traditional hard science background. I feel that I contributed to this project, and have been a valuable member of my team while at LLNL. My suggestion is to open up more projects and internships to students from backgrounds not traditionally considered by DHS. For example, had I not had the Emergency Management background to combine with a Mass Communications degree, I do not think I would have had the confidence to apply for this program. I believe that opening up students from a wider background has the potential to interest applicants who can bring talents and ideas to DHS projects that could ultimately benefit the overall mission and goals of the department. I know that I feel extremely lucky that my skills were considered, and that I was given the opportunity to contribute to a project which served the mission of DHS.

I feel extremely grateful for my time as a DHS intern at LLNL. I believe that this internship has changed my entire future, and will be of benefit for me in all of my future endeavors. I hope to one day see the work I helped support while at LLNL being used

on a federal level to help with response planning. My ultimate goal for this internship was to contribute something to the emergency management and homeland security communities that I can be proud of; I feel confident that I achieved that through my work at LLNL. This paper gave an overview of my experiences while at LLNL, explained the project I have been a part of, and explained my specific role within that project, discussed my achievements, explained how my internship has changed where I plan to take my career path, and discussed how I believe DHS can enhance their future internship programs. I am so excited to continue working on my project at LLNL, and, one day, being a part of a team to actively help keep America safe.